

REMARKS

Claims 1-23 are pending in the application. Claims 1, 14, 17, and 20 are independent. By the foregoing Amendment, Applicants have amended claims 1, 14, 17 and 20. These changes are believed to introduce no new matter and their entry is respectfully requested.

Rejection of Claims 1, 7-8, 12-13, and 17 Under 35 U.S.C. §102(e)

In paragraph 4 of the Office Action, the Examiner rejected claims 1, 7-8, 12-13, and 17 under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 6,356,689 to Greywall et al. (hereinafter "Greywall"). A claim is anticipated only if each and every element of the claim is found, either expressly or inherently, in a reference. (MPEP §2131 *citing Verdegaa Bros. v. Union Oil Co. of California*, 814 F.2d 628 (Fed. Cir. 1987)). The identical invention must be shown in as complete detail as is contained in the claim. *Id. citing Richardson v. Suzuki Motor Co.*, 868 F.2d 1226,1236 (Fed. Cir. 1989)). Applicant respectfully traverses the rejection.

Independent claim 1 recites in pertinent part "***an external cavity laser having a silicon etalon heater***, the silicon etalon heater having: a single-crystal silicon ***active region*** fully or partially transparent to an optical signal; a bulk silicon ***inactive region***" (emphasis added). Independent claim 17 recites in pertinent part "***tuning an external cavity laser using a silicon etalon heater*** by: adjusting resistivity of the silicon etalon heater, the silicon etalon having a membrane coupling a single-crystal silicon ***active region*** to a bulk silicon inactive region" (emphasis added). That is, in embodiments of the present invention, the silicon etalon itself may be used as a heater to tune the external cavity laser rather than using a separate heating element.

Applicants respectfully submit that Greywall fails to show the identical invention as that of claims 1 and 17. For example, Greywall fails to teach ***an external cavity laser*** having a ***single-crystal silicon active region***" and a ***bulk silicon inactive region***" as recited in claims 1 and 17. Greywall does not mention lasers, external cavity lasers, tuning of lasers, active regions of single-crystal silicon, inactive regions of single-crystal silicon. Applicants respectfully submit that Applicants only need to demonstrate that one element of the claimed invention is missing to establish that the Examiner has not met the initial burden of making a *prima facie* case of

anticipation with respect to the claimed invention. Applicants have shown that several elements are not taught either expressly or inherently in Greywall. Applicants respectfully submit therefore that because the Examiner has failed to show that Greywall teaches the identical invention as recited in claims 1 and 17, the Examiner has failed to meet the burden of establishing a *prima facie* case of anticipation of claims 1 and 17 over the Greywall. Accordingly, Applicants respectfully submit that claims 1 and 17 are patentable of Greywall.

Claims 7-8 and 12-13 properly depend from claim 1, which applicants respectfully submit is patentable over Greywall. Accordingly, Applicant respectfully submits that claims 7-8 and 12-13 are patentable as well. MPEP §2143.03 provides that if an independent claim is unobvious, then any claim depending from the independent claim is unobvious (citing *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988)). Accordingly, Applicant respectfully requests that the Examiner reconsider and remove the rejection to claims 1, 7-8, 12-13, and 17.

Rejection of Claims 2-6 Under 35 U.S.C. §103(a)

In paragraph 6, the Examiner rejected claims 2-6 under 35 U.S.C. §103(a) as unpatentable over Greywall in view of Neustroev et al. "Hundred MEV Ion Irradiation Effect on Dopant Depth Profiles in Silicon," 1998 (hereinafter "Neustroev"). To establish a *prima facie* case of obviousness, an Examiner must show three things: (1) that there is some suggestion or motivation to modify a reference or combine reference teachings to arrive at the claimed invention, (2) that there must be a reasonable expectation of success, and (3) that Greywall teach or suggest each and every element of the claimed invention. (MPEP §2143.) Applicant respectfully traverses the rejection.

Claims 2-6 properly depend from claim 1, which applicants respectfully submit is patentable. Accordingly, Applicant respectfully submits that claims 2-6 are patentable as well. (See MPEP §2143.03 (citing *In re Fine*.)) Accordingly, Applicant respectfully requests that the Examiner reconsider and remove the rejection to claims 2-6.

Rejection of Claim 11 Under 35 U.S.C. §103(a)

In paragraph 7, the Examiner rejected claim 11 under 35 U.S.C. §103(a) as unpatentable over Greywall in view of U.S. Patent No. 6,787,894 to Jeung et al. (hereinafter “Jeung”). Applicant respectfully traverses the rejection.

Claim 11 properly depends from claim 1, which applicants respectfully submit is patentable. Accordingly, Applicant respectfully submits that claim 11 is patentable as well. (See MPEP §2143.03 (citing *In re Fine*)) Accordingly, Applicant respectfully requests that the Examiner reconsider and remove the rejection to claim 11.

Rejection of Claims 9-10 and 18-19 Under 35 U.S.C. §103(a)

In paragraph 8, the Examiner rejected claim 9-10 and 18-19 under 35 U.S.C. §103(a) as unpatentable over Greywall in view of U.S. Patent Application No. 2002/0155619 to Kurihara et al. (hereinafter “Kurihara”). Applicant respectfully traverses the rejection.

Claims 9-10 and 18-19 properly depend from claim 1 and 17, respectively, which applicants respectfully submit is patentable. Accordingly, Applicant respectfully submits that claims 9-10 and 18-19 are patentable as well. (See MPEP §2143.03 (citing *In re Fine*)) Accordingly, Applicant respectfully requests that the Examiner reconsider and remove the rejection to claims 9-10 and 18-19.

Rejection of Claims 14-16 and 20-23 Under 35 U.S.C. §103(a)

In paragraph 9, the Examiner rejected claim 14-16 and 20-23 under 35 U.S.C. §103(a) as unpatentable over Greywall in view of U.S. Patent No. 5,907,420 to Chraplyvy et al. (hereinafter “Chraplyvy”). Applicant respectfully traverses the rejection.

Independent claim 14 recites in pertinent part “a transponder having an external cavity laser, the external cavity laser having *a silicon etalon heater*, the silicon etalon heater having a single-crystal silicon *active region* adapted to receive an optical signal, a bulk silicon *inactive region*, and a membrane coupling the single-crystal silicon active region to the bulk silicon inactive region” (emphasis added). Independent claim 20 recites in pertinent part “a doped

silicon etalon heater positioned in the cavity, wherein the doped silicon etalon comprises a membrane coupling a single-crystal silicon *active region* to a bulk silicon *inactive region*, wherein the single-crystal silicon active region is electrically conductive, and wherein the doped silicon etalon heater is to receive a current *to tune the laser*” (emphasis added). Support for this subject matter is found in original claims 14 and 20.

Applicants respectfully submit that Greywall fails to show each and every element of claims 14 and 20. For example, Greywall fails to teach *a silicon etalon heater* having a *single-crystal silicon active region* and a *bulk silicon inactive region* as recited in claims 14 and 20. Greywall does not mention heaters, active regions of single-crystal silicon, inactive regions of single-crystal silicon, etc. Applicants respectfully submit that Applicants only need to demonstrate that one element of the claimed invention is missing to establish that the Examiner has not met the initial burden of making a *prima facie* case of anticipation with respect to the claimed invention. Applicants have shown that several elements are not taught either expressly or inherently in Greywall. Applicants respectfully submit therefore that because the Examiner has failed to show that Greywall teaches the identical invention as recited in claims 14 and 20, the Examiner has failed to meet the burden of establishing a *prima facie* case of anticipation of claims 14 and 20 over the Greywall. Accordingly, Applicants respectfully submit that claims 14 and 20 are patentable over Greywall.

Applicants respectfully submit that Chraplyvy fails to make up for the deficiency. Chraplyvy appears to be directed to optical networks. Chraplyvy also fails to teach or fairly suggest *a silicon etalon heater* having a *single-crystal silicon active region* and a *bulk silicon inactive region* as recited in claims 14 and 20. The combination of Greywall and Chraplyvy thus fail to teach *a silicon etalon heater* having a *single-crystal silicon active region* and a *bulk silicon inactive region* as recited in claims 14 and 20. Applicants respectfully submit therefore that they have shown that the Examiner has failed to meet the burden of establishing a *prima facie* case of obviousness of claims 14 and 20 over Greywall in view of Chraplyvy and that claims 14 and 20 are thus patentable over Greywall in view of Chraplyvy.

Claims 15-16 and 21-23 properly depend from claim 14 and 20, respectively, which applicants respectfully submit is patentable. Accordingly, Applicant respectfully submits that claims 15-16 and 21-23 are patentable as well. (See MPEP §2143.03 (citing *In re Fine*.) Accordingly, Applicant respectfully requests that the Examiner reconsider and remove the rejection to claims 14-16 and 20-23.

CONCLUSION

Applicants submit that all grounds for rejection have been properly traversed, accommodated, or rendered moot, and that the application is in condition for allowance. The Examiner is invited to telephone the undersigned representative if the Examiner believes that an interview might be useful for any reason.

Respectfully submitted,
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